

Application No. 09/693,377
Amendment "C" dated February 10, 2006
Reply to Office Action mailed October 11, 2005

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-11. (Cancelled).

Claim 12. (Currently Amended) A transmission method in a base station for use in a CDMA mobile communication system for transmitting a signal of each of a plurality of channels included in each of a plurality of channel groups, the transmission method comprising the steps of:

spreading the signal by using an orthogonal code and a spreading code;

summing up to combine the spread signals; and

transmitting the [[spread]] signals which are summed up to combine,

wherein spreading codes for use in spreading signals of respective channel groups differ from each other,

orthogonal codes for use in spreading signals of respective channels in each channel group differ from each other,

channels of each channel group include a pilot channel,

the pilot channel is spread using an orthogonal code and a spreading code,

the signals which are summed up to combine include the plurality of channel groups,
each of the channel groups having the pilot channel, and

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a signal transmitted over the pilot channel undergoes data modulation by a known pattern or does not undergo any data modulation.

Claim 13. (Currently Amended) A transmission method in a base station for use in a CDMA mobile communication system for transmitting a signal of each of a plurality of channels included in each of a plurality of channel groups, the transmission method comprising the steps of:

spreading the signal by using an orthogonal code and a spreading code;

summing up to combine the spread signals; and

transmitting the [[spread]] signals which are summed up to combine,

wherein spreading codes for use in spreading signals of respective channel groups differ from each other,

orthogonal codes for use in spreading signals of respective channels in each channel group differ from each other,

channels of the channel groups include a pilot channel,

the pilot channel is spread using an orthogonal code and a spreading code,

the signals which are summed up to combine include the plurality of channel groups, each of the channel groups having the pilot channel,

the step of transmitting transmits a signal of the pilot channel with a symbol rate higher than a minimum symbol rate (defined in the CDMA mobile communication system), and

the signal transmitted over the pilot channel undergoes data modulation by a known pattern or does not undergo any data modulation.

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Claim 14. (Previously Presented) The transmission method as claimed in claim 13, wherein the symbol rate higher than the minimum symbol rate is determined in accordance with a relationship between transmission power of each channel and channel capacity.

Claim 15. (Currently Amended) A communication method for use in a CDMA mobile communication system comprising a base station for transmitting a signal of each of a plurality of channels included in each of a plurality of channel groups, and a mobile station for receiving the signal, the communication method comprising the steps of:

spreading, in the base station, the signal by using an orthogonal code and a spreading code;

summing up to combine, in the base station, the spread signals; [[and]]

transmitting, in the base station, the spread signals which are summed up to combine;

receiving, in the mobile station, signals including signals of the plurality of channels of the plurality of channel groups; and

measuring, in the mobile station, in each channel group, interference power of a channel other than a pilot channel by despreading the received signals by using a orthogonal code and a spreading code for use in spreading a signal of the pilot channel of the channel group,

wherein spreading codes for use in spreading signals of respective channel groups differ from each other,

orthogonal codes for use in spreading signals of respective channels in each channel group differ from each other,

channels of each channel group include a pilot channel,

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the pilot channel is spread using an orthogonal code and a spreading code,
the signals which are summed up to combine include the plurality of channel groups,
each of the channel groups having the pilot channel,
a signal transmitted over the pilot channel undergoes data modulation by a known pattern
or does not undergo any data modulation, and
the step of transmitting transmits a signal of a pilot channel only in one of the channel
groups, and does not transmit a signal of a pilot channel in another channel group.

Claim 16. (Currently Amended) A base station for use in a CDMA mobile
communication system for transmitting a signal of each of a plurality of channels included in
each of a plurality of channel groups, the base station comprising:

means for spreading the signal by using an orthogonal code and a spreading code;

summing up to combine the spread signals; and

means for transmitting the spread signals which are summed up to combining.

wherein spreading codes for use in spreading signals of respective channel groups differ
from each other,

orthogonal codes for use in spreading signals of respective channels in each channel
group differ from each other,

channels of each channel group include a pilot channel,

the pilot channel is spread using an orthogonal code and a spreading code,

the signals which are summed up to combine include the plurality of channel groups,
each of the channel groups having the pilot channel, and

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a signal transmitted over the pilot channel undergoes data modulation by a known pattern or does not undergo any data modulation.

Claim 17. (Previously Presented) A CDMA mobile communication system comprising the base station as claimed in claim 16.

Claim 18. (Currently Amended) A base station for use in a CDMA mobile communication system for transmitting a signal of each of a plurality of channels included in each of a plurality of channel groups, the base station comprising:

means for spreading the signal by using an orthogonal code and a spreading code;

means for summing up to combine the spread signals; and

means for transmitting the spread signals which are summed up to combine,

wherein spreading codes for use in spreading signals of respective channel groups differ from each other,

orthogonal codes for use in spreading signals of respective channels in each channel group differ from each other,

channels of the channel groups include a pilot channel,

the pilot channel is spread using an orthogonal code and a spreading code,

the signals which are summed up to combine include the plurality of channel groups, each of the channel groups having the pilot channel,

the means for transmitting transmits a signal of the pilot channel with a symbol rate higher than a minimum symbol rate defined in the CDMA mobile communication system, and

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the signal transmitted over the pilot channel undergoes data modulation by a known pattern or does not undergo any data modulation.

Claim 19. (Previously Presented) The base station as claimed in claim 18, wherein the symbol rate higher than the minimum symbol rate is determined in accordance with a relationship between transmission power of each channel and channel capacity.

Claim 20. (Previously Presented) A CDMA mobile communication system comprising the base station as claimed in claim 18.

Claim 21. (Currently Amended) A CDMA mobile communication system comprising a base station for transmitting a signal of each of a plurality of channels included in each of a plurality of channel groups, and a mobile station for receiving the signal, wherein

the base station comprises:

means for spreading the signal by using an orthogonal code and a spreading code;

means for summing up to combine the spread signals; and

means for transmitting the spread signals which are summed up to combine, and

the mobile station comprises:

means for receiving signals including signals of the plurality of channels of the plurality of channel groups; and

means for measuring, in each channel group, interference power of a channel other than a pilot channel by despreading the received signals by using a orthogonal code

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and a spreading code for use in spreading a signal of the pilot channel of the channel group,

wherein spreading codes for use in spreading signals of respective channel groups differ from each other,

orthogonal codes for use in spreading signals of respective channels in each channel group differ from each other,

channels of each channel group include a pilot channel,

the pilot channel is spread using an orthogonal code and a spreading code,

the signals which are summed up to combine include the plurality of channel groups, each of the channel groups having the pilot channel.

a signal transmitted over the pilot channel undergoes data modulation by a known pattern or does not undergo any data modulation, and

the means for transmitting transmits a signal of a pilot channel only in one of the channel groups, and does not transmit a signal of a pilot channel in another channel group.

Claim 22. (Currently Amended) A mobile station for use in a CDMA mobile communication system for receiving a signal of each of a plurality of channels included in each of a plurality of channel groups, the signal being spread by using a orthogonal code and a spreading code, spreading codes for use in spreading signals of respective channel groups differing from each other, orthogonal codes for use in spreading signals of respective channels in each channel group differing from each other, channels of each channel group including a pilot

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channel, the pilot channel being spread using an orthogonal code and a spreading code, the mobile station comprising:

means for receiving signals including signals of the plurality of channels of the plurality of channel groups; and

means for measuring, in each channel group, interference power of a channel other than a pilot channel by despreading the received signals by using an orthogonal code and a spreading code for use in spreading a signal of the pilot channel of the channel group,

wherein the received signals include the plurality of channel groups, each of the channel group having the pilot channel, and

a signal transmitted over the pilot channel undergoes data modulation by a known pattern or does not undergo any data modulation.

Claim 23. (Previously Presented) The mobile station as claimed in claim 22, wherein the means for measuring interference power measures the interference power by using a symbol period of the pilot channel.